Remarks

I. Status of claims

Claims 1-20 were pending.

Claims 21-23 have been added.

Claims 11-20 have been allowed.

II. Claim rejection under 35 U.S.C. § 112, second paragraph

Claim 10 has been amended to address the Examiner's rejection under 35 U.S.C. § 112, second paragraph, which now should be withdrawn.

Claim 10 has not been rejected on the basis of prior art.

III. Claim rejections under 35 U.S.C. § 102(b)

The Examiner has rejected claims 1-3 and 7-9 under 35 U.S.C. § 102(b) over Hara (U.S. 5,726,435).

With respect to independent claim 1, the Examiner has asserted that (emphasis added):

> Hara et al. discloses a method and apparatus for reading an optically [readable] two-dimensional code, which includes applying an invertible graphical operation between regions of a base [image] and information-encoding graphical templates selected from a predetermined template set to produce a graphical bar code with regions from which graphical templates are recoverable [by applying] an inverse graphical operation between [the] graphical bar code and corresponding base image regions (col. 3, lines 45+).

Contrary to the Examiner's assertion, however, in Hara's approach, graphical templates (plural) are not recoverable from the finalized two-dimensional code 46. Rather, only a single one of the cell feature conversion matrix patterns 42 is recoverable from the finalized two-dimensional code 46 because only a single one of the cell feature conversion matrix patterns 42 is used to produce the finalized two-dimensional code 46 (see, e.g., col. 13, lines 17-31).

In addition, Hara's cell feature conversion matrix patterns 42 are not information-encoding and, therefore, do not constitute "information-encoding graphical templates," as recited in claim 1. Hara clearly teaches that his cell feature conversion matrix patterns 42 "are formed based on a random number and a certain regularity for changing cell features"

(col. 12, lines 56-57). There is no information encoded in the cell feature conversion matrix patterns 42.

For at least these reasons, the Examiner's rejection of independent claim 1 under 35 U.S.C. § 102(b) over Hara should be withdrawn.

Claims 2, 3, and 7-9 incorporate the features of independent claim 1 and therefore are patentable for at least the same reasons explained above. Claims 3 and 8 also are patentable for the following additional reasons.

Claim 3 recites that the method further comprises applying XOR operations between the graphical bar code regions and corresponding base image regions to produce the graphical templates. Contrary to the Examiner's assertion, Hara fails to teach or suggest such a step. Hara expressly teaches that the particular graphical template (i.e., cell feature conversion matrix pattern 42) used to produce the finalized two-dimensional code 46 is known either because only a single cell feature conversion matrix pattern 42 exists (see col. 13, lines 17-19) or because the finalized two-dimensional code 46 stores information data 47 identifying the particular one of the cell feature conversion matrix patterns 42 used to produce the finalized two-dimensional code 46. Therefore, in Hara's approach, XOR operations are not applied between graphical bar code regions and corresponding base image regions to produce any graphical template, much less to produce multiple graphical templates, as recited in claim 3. Indeed, Hara's approach assumes that during decoding the base image (i.e., provisional two-dimensional bar code 41) is not known and, therefore, no base image is available for use in XOR operations with the finalized two-dimensional code 46.

Claim 8 recites that in each graphical template the number of bright pixels is greater than the number of dark pixels. With respect to claim 8, the Examiner has asserted that:

> Hara et al. teaches a method wherein the number of bright/white pixels is greater than that [of] the dark/black pixels (col. 8, lines 1+).

The discussion in column 8 of Hara, which the Examiner cites to support his assertion, relates to the features of the two-dimensional code 1. This discussion has nothing to do with the features of the cell feature conversion matrix patterns 42, which the Examiner incorrectly has equated with the graphical templates recited in the claims. With respect to the nature of the cell feature conversion matrix patterns 42, Hara only teaches that they "are formed based on a random number and a certain regularity for changing cell features" (col. 12, lines 56-57). Thus, there is no teaching or suggestion in Hara that would have led one of ordinary skill in

the art at the time of the invention to construct a predefined set of graphical templates each of which has a greater number of bright pixels than dark pixels, as recited in claim 8

IV. Claim rejections under 35 U.S.C. § 103(a)

The Examiner has rejected claims 4-6 under 35 U.S.C. § 103(a) over Hara(II) (EP 0672994) in view of Chang (WO 00/11599).

The relevant disclosure of Hara(II) substantially corresponds to the disclosure of the Hara reference discussed above (i.e., U.S. 5,726,435).

Chang does not teach or suggest anything relating to invertible graphical operations or graphical templates. Chang discloses a scheme for embedding a message in a visual image by dividing pixels of a visual image into sync cells 124 and data cells 126, and grouping the cells into tiles 122 each of which contains one sync cell 124 and multiple data cells 126. As shown in FIG. 1, the tiles 122 are arranged in a two-dimensional array to form the modified visual image containing the embedded message. Each sync cell 124 and data cell 126 includes a glyph pixel (GP) 116 surrounded by a set of background pixels (BP) 118. The values of the background pixels correspond to the values of corresponding pixels in the original visual image. The value of each glyph pixel does not correspond to the value of the corresponding pixel in the original visual image, but rather is modified to encode logical "1's" and "0's" based on relative contrast relative to the values of the background pixels in the same data cell.

Thus, Chang's encoding method operates based on a cell-by-cell analysis of local contrast, whereas Hara's encoding method operates based on application of a cell feature conversion matrix pattern 42 to a provisional two-dimensional code 41 to produce the finalized two-dimensional code 46. The Examiner fails to explain how Chang's very different encoding approach possibly could have informed one of ordinary sill in the art at the time of the invention to modify Hara's encoding approach. The Examiner's asserted basis for combining the teachings of Chang and Hara are conclusory and unpersuasive.

Therefore, Chang's disclosure does not make up for the failure of Hara(II) to teach or suggest the features of claim 1 discussed above. Since claims 4-6 incorporate the features of independent claim 1, claims 4-6 are patentable for the same reasons explained above.

V. Conclusion

For the reasons explained above, all of the pending claims are now in condition for allowance and should be allowed.

Charge any excess fees or apply any credits to Deposit Account No. 08-2025.

Respectfully submitted,

Date: September 4, 2003

Edouard Garcia
Reg. No. 38,461
Telephone No.: (650) 631-6591

Please direct all correspondence to:

Hewlett-Packard Company
Intellectual Property Administration
Legal Department, M/S 35
P.O. Box 272400
Fort Collins, CO 80528-9599